

REMARKS

Claim Objections

Claims 1 and 31 are objected to because of informalities

The Examiner believes that it is necessary to insert the article "a" in front of the claimed random access memory in claims 1 and 31. Although it is believed that the Examiner's suggestions are unnecessary because the memory may be considered as either singular or plural and because in everyday usage the term RAM is generally used without an article, the Examiner's suggested changes have been made to claims 1 and 31. This change does not affect the scope of claims 1 and 31 and as such is in no way related to the patentability of these claims. This objection should now be moot in light of the amendments, and the claims should be in condition for allowance.

Claim Rejections 35 U.S.C. § 102

Claims 1, 2, 5-9, 14, 16-19, 22-23, 26-27, 29, 31-32 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Number 6,216,224 to Klein ("Klein")

The independent claims rejected as being anticipated by Klein are claims 1, 14, 22, and 31. The remaining claims depend from one of these base claims. Klein does not anticipate any of these claims because Klein, like the prior art described in the present patent application, teaches shadowing the bios from ROM to RAM before execution. The systems and methods in each of the independent sets of claims do not claim shadowing the BIOS from the ROM to RAM before execution, but rather claim different aspects of a very different way of booting a device. In the present application, a ROM is taught to be a type of Code Storage Device (CSD). Page 2, line 12. Code Storage Devices are also distinguished from Application and File Storage Devices (AFSDs) in the present application. See pages 1 - 2. In summary, an AFSD is a mass storage

device used to store an operating system, application programs or general file and user data. An AFSD is a non-volatile storage device such as solid state memory or a magnetic or optical drive. This is different from a CSD, another type of non-volatile memory, as seen on page 2 of the application:

[r]eferring to Fig. 1, in a generic computing environment, two types of non-volatile storage devices are used. These non-volatile storage devices are used for code storage and for application and file storage. Typically a code storage device (CSD) 45 has a much smaller capacity than an application and file storage device (AFSD) 40. In addition, a CSD is usually accessed after system power up or after system reset and its content is very infrequently updated by the computer system in comparison to an AFSD that is updated frequently by the applications or users of the operating system.

Traditionally the CSD 45 is hardwired to the system bus and is mapped into a specific memory location. After the completion of system power up reset or system reset, the CPU 30 will look for its initialization code in this specific location of CSD 45. This initialization code is dependent on system architecture or hardware, and in PC architecture is known as the BIOS. In other architectures this initialization code is referred to as initialization firmware, boot firmware etc... Examples of CSDs are EPROM, Flash ROM, and OTP PROM. An AFSD is used in order to store an operating system, application programs or general file and user data. An AFSD is a non volatile storage device such as solid state memory or a magnetic or optical drive

The BIOS or booting firmware is normally stored in the CSD 45 in order for the CPU to execute its instructions. Traditionally if boot code is stored in the AFSD 40, a small set of instructions, constituting the basic BIOS must be stored in the CSD 45 in order to copy the BIOS or booting firmware into system RAM 50. In this invention, the requirement of the CSD for storing and executing these initialization instructions is eliminated.

Page 2, lines 2-20.

Furthermore, as seen in the last line of the above quotation, the requirement for a ROM or other type of CSD for storing the boot code is eliminated in the present application, unlike in

Klein.¹ Therefore, the present invention teaches away from the solution in Klein, in addition to the fact that the each of the recitations in the claims are not taught by Klein.

Turning now to the specific language of the claims and the specific aspects of the present invention recited in each of the claims, it should become clear that Klein does not anticipate any of the pending claims.

Claim 1 recites, in pertinent part, “an application and file storage device configured to read and write data files, one or more of the data files including the basic input/output system (BIOS) interface;...and a loading logic circuit that copies a portion of the BIOS from the storage device into the RAM” (emphasis added).

As discussed above, Klein does not teach either of these two limitations. To the contrary, Klein teaches copying or “shadowing” from ROM (a type of code storage device) to RAM, not from an application and file storage device, as required by the claim.

Claim 14 recites, in pertinent part, “copying a portion of a BIOS from an application and file storage device into RAM.”

As discussed above, Klein does not teach this limitation. To the contrary, Klein teaches copying or “shadowing” from ROM (a type of code storage device) to RAM, not from an application and file storage device, as required by the claim.

Claim 22 recites, in pertinent part, “storing the interface in an application and file storage device; and thereafter copying the interface from the application and application and file storage device into RAM without using a microprocessor.”

¹ It should be noted that there could, of course, be a ROM or “CSD” for various other reasons, and that the *claims* do not specifically *exclude* the use of a ROM. In all comparisons, the exact language of the various different claims dictates the scope of the claims, and these portions of the specification brought to the attention of the Examiner should not be interpreted as any type of disclaimer (or other narrowing estoppel) of the scope of the claims because they are not intended as such.

As discussed above, Klein does not teach these limitations. To the contrary, Klein teaches storing in and copying from a ROM (a type of code storage device) to RAM, not from an application and file storage device, as required by the claim.

Claim 31 recites, in pertinent part, “an application and file storage device having a plurality of files...an interface for communicating between the microprocessor, the application and file storage device and the human interface devices, the interface residing in a file of the file storage device; and means for copying a portion of the interface into the random access memory without using the microprocessor” (emphasis added).

As discussed above, Klein does not teach these limitations. To the contrary, Klein teaches the interface is in a ROM (a type of code storage device) not in a file of the application and file storage device, as required by the claim.

The dependent claims for each of the independent base claims are allowable for all the reasons above regarding the base claims. Furthermore, many of the dependent claims also contain elements not disclosed by the cited art, but these will not be argued in detail in this section of the Response for purposes of brevity. However, the arguments made in response to the §103 rejections of the dependent claims below are also relevant and incorporated by reference.

Claim Rejections 35 U.S.C. § 103

Many dependent claims were also rejected based upon Klein in combination with various other references. However, the combination of Klein with the other references does not render any of the claims obvious for the reasons presented below.

Claims 3-4, 20-21, 25 and 33 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,216,224 to Klein (“Klein”) and U.S. Patent Number 5,579,522 to

Christeson et al. ("Christeson")

The Examiner relies upon Christeson for the disclosures of a flash memory device and magnetic or optical drive not taught by Klein in support of the rejection of several dependent claims listed above. As discussed above with regard to the § 102 rejection, each of the above listed dependent claims is novel and not anticipated by Klein. These claims are also not obvious under §103 for similar reasons.

Claim 3 adds to independent claim 1 that "the application and file storage device is a flash memory device." Claim 4 adds to claim 1 that "the application and file storage device is a magnetic or optical disk drive."

Like Klein, Christeson also does not teach the claim 1 recitation of "an application and file storage device configured to read and write data files, one or more of the data files including the basic input/output system (BIOS) interface; ...and a loading logic circuit that copies a portion of the BIOS from the storage device into the RAM" (emphasis added). Nor does it teach the claim 14 recitation of "copying a portion of a BIOS from an application and file storage device into RAM," and the claim 22 recitation of "storing the interface in an application and file storage device; and thereafter copying the interface from the application and file storage device into RAM without using a microprocessor," and the claim 31 recitation of "an application and file storage device having a plurality of files...an interface for communicating between the microprocessor, the application and file storage device and the human interface devices, the interface residing in a file of the file storage device; and means for copying a portion of the interface into the random access memory without using the microprocessor" (emphasis added).

The application and file storage device in Christeson is the data storage device 106 seen in Christeson's Figure 1. The hardware/software interface (BIOS in PC terminology) is not

stored in this storage device 106 but in flash memory 103. This flash memory is a type of code storage device as distinguished on page 2, lines 2-20 of the present application, which was excerpted above in this Response. The teaching in Christeson that the code storage device can be flash memory (so that it can be easily updated without removing any parts or covers from the computer) does mean that Christeson teaches the various claim limitations above regarding an application and file storage device.

In addition to the fact that the combination of Klein and Christeson does not teach the claimed invention, there is no motivation to combine the two references. The Examiner appears to contend that flash was well known and that therefore an artisan would have been motivated to use the flash memory taught by Christeson to fill in the lacking teachings of Klein because one would not have to remove or replace any components as taught by Christeson. However, as discussed above, Christeson discussed using flash for the code storage device, not for the application and file storage device. The two storage devices perform very different functions in a larger device, as described in the present application. Furthermore, it hardly seems reasonable that Christeson's teachings of using flash in order to not have to remove or replace the cover from a computer would render any new invention that claims flash memory as part of a combination obvious. It is kindly asserted that the Examiner appears to be using impermissible hindsight to arrive at the claimed invention.

Furthermore, both of these applications teach away from the present invention because both teach usage of a code storage device for storing the hardware/software interface.

Claims 20-21, 25 and 33 are similar to claims 3 and 4 and allowable for all the same reasons as claims 3 and 4.

Claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,216,224 to Klein ("Klein") and U.S. Patent Number 5,579,522 to Christeson et al. ("Christeson") and further in view of U.S. Published Patent Application Number 2002/0138702 to Gefen et al. ("Gefen")

Claim 24 depends from claim 22 and adds the additional recitation "wherein the application and file storage device is a NAND flash memory device."

Claim 24 is allowable for all the reasons above regarding Klein and Christeson. As discussed above with regard to claims 3-4, 20-21, 25 and 33, the combination of Klein and Christeson does not teach the various claim recitations regarding use of an application and file storage device. The addition of Gefen does not remedy the shortcomings of the previous combination, and there is no motivation to combine Gefen with the other references.

While Gefen does teach NAND, it does not teach the booting of a system or using NAND for such purposes and one of ordinary skill in the art would not be motivated to combine Gefen with either Klein or Christeson. It is kindly asserted that the Examiner's cited motivation to combine is insufficient, as best as it can be understood. The Examiner indicates that "it would have been obvious to modify the system of Klein and Christeson to include NAND flash memory device because it was well known to benefit from a lower cost, is non-executable and requires less routing resources as taught by Gefen." It is unclear why the fact that NAND is non-executable would motivate one to combine it with Klein and Christeson. Furthermore, it is also not clear what the Examiner means when he indicates that NAND requires less routing resources and if that is the case regarding implementation in the present invention. In general, the Examiner appears to simply take the disclosure of NAND to fill in the missing limitation, using the claim itself as a roadmap. It is kindly asserted that this is hindsight and that it is

impermissible to pick and choose missing elements from the prior art to arrive at the claimed invention.

Claims 10-11 and 34-35 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,216,224 to Klein ("Klein") and U.S. Patent Number 5,809,559 to Kim ("Kim")

Claim 10 depends from claim 1 and is allowable for all the reasons regarding claim 1 discussed above. Claim 10 adds the additional recitation "wherein the loading logic circuitry comprises a write protect mechanism that prevents the location of the storage device having the BIOS from being overwritten."

Here Kim is introduced for the proposition that a write protect mechanism was well known. However, the Examiner has not cited any motivation to combine other than the general proposition that a write protect mechanism "benefits" the BIOS by preventing corruption. Kim teaches and is directed towards a system and method utilizing a virtual addressing buffer circuit to emulate a device which is physically not present. This is a very different endeavor than the booting operation taught by the present application. Again, the Examiner appears to have chosen from the vast library of prior art in order to arrive at the claimed invention using impermissible hindsight.

Claim 11 is dependent from claim 10 and adds the recitation "wherein the write protect mechanism generates a first and second write strobe signal for each write strobe signal of a microprocessor."

Kim simply does not teach this and the Examiner's assertion that this is obvious is unsupported.

Claim 34-35 have similar limitations and are not obvious for the same reasons as claim 10.

Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,216,224 to Klein ("Klein") and U.S. Patent Number 6,718,464 to Cromer et al. ("Cromer")

Claim 15 is dependent from claim 14 and is allowable for all the reasons regarding the base claims from which it depends. Claim 15 adds the recitation "wherein the storage device includes multiple BIOSs and wherein a user can select which BIOS to copy from the application and file storage device into RAM."

Cromer is cited for the proposition that selecting from multiple BIOSs is well known and that one of ordinary skill in the art would therefore have been motivated to implement such a selection in the system of Klein because it would benefit by such a configuration. However, again, the Examiner has not cited any teachings within either of the references that would point one of skill in the art to the other reference, but instead appears to have simply relied on hindsight to combine these references.

Claims 28 and 30 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,216,224 to Klein ("Klein") and U.S. Patent Number 6,154,838 to Le et al. ("Le")

Claim 28 is dependent from claim 22 and is allowable for all the reasons regarding the base claims from which it depends. Claim 28 adds the recitation of "copying additional interface device commands from the application and file storage device into RAM using the microprocessor."

Le is cited for the proposition that it teaches copying additional interface device commands from the applications and file storage device into RAM using the microprocessor. This is incorrect. It does not. As in Klein, the flash ROM that Le copies from is not an application and file storage device, but is a code storage device. Again, a code storage device is

distinguished from an application and file storage device, as discussed on Page 2, lines 2-20 of the present application, excerpted on page 8 supra.

Additionally, it is kindly asserted that the Examiner's cited motivation to combine is generic in nature and appears to rely on hindsight. The Examiner indicates that one of ordinary skill in the art would be motivated to combine Le with Klein "to positively affect the economics of operating and maintaining the computer system." Office Action, page 14. It is kindly asserted that a proper motivation to combine must involve a specific teaching in the reference that would lead one of ordinary skill in the art to combine it with the other reference. Utilization of such generic benefits, in hindsight, is improper and would render virtually any computer related patent application obvious.

Claim 30 is dependent from claim 22 and is allowable for all the reasons regarding the base claims from which it depends. Claim 30 adds the limitation "wherein the step of copying the interface further comprises the usage of error correction code."

The Examiner states that Le discloses using error correction code in column 14, lines 24-39. However, there is no mention of error correction code at this location, and Le appears to teach the use of a checksum (Fig. 5), which is a very different alternative to error correction code.

Furthermore, it is kindly asserted that the Examiner's cited motivation to combine is generic in nature and appears to rely on hindsight. The Examiner indicates that one of ordinary skill in the art would be motivated to combine Le with Klein "to positively affect the economics of operating and maintaining the computer system." Office Action, page 15. It is kindly asserted that a proper motivation to combine must involve a specific teaching in the reference that would lead one of ordinary skill in the art to combine it with the other reference. Utilization

of such generic benefits, in hindsight, is improper and would render virtually any computer related patent application obvious.

Allowable Subject Matter


The Examiner's indication that claims 12 and 13 would be allowable if rewritten in independent form is greatly appreciated. It is believed that these claims are allowable as written for the reasons discussed above.

Conclusion

Accordingly, it is believed that this application is now in condition for allowance and an early indication of its allowance is solicited. However, if the Examiner has any further matters that need to be resolved, a telephone call to the undersigned attorney at 415-318-1163 would be appreciated.

**EXPRESS MAIL
LABEL NO:
EV437669046US**

Respectfully submitted,


Gerald P. Parsons
Reg. No. 24,486

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Date

PARSONS HSUE & DE RUNTZ LLP
655 Montgomery Street, Suite 1800
San Francisco, CA 94111
(415) 318-1160 (main)
(415) 318-1163 (direct)
(415) 693-0194 (fax)